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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/626,086
Filing Date: July 24, 2003
Appellant(s): BLOCK ET AL.

Scott A. Stinebruner
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/21/06 appealing from the Office action mailed 5/22/06.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

20020161923 A1	Foster	10-2001
6587866 B1	Modi	1-2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 16, 31 and 35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Establishing multiple concurrent logical connections between the source node and the target node, each logical connection configured to communicate data over a connection path among the plurality of connection paths. As in page 6, lines 2-6 and page 6, lines 21-23 and figure 6 only discloses that the transport service suitable for encapsulating and managing the establishment of multiple network connection between a source node, a target node and one or more backup nodes. The specification does not disclose the multiple logical connections are concurrent.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 16, 31 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It's unclear to the examiner how to establish the multiple concurrent logical connections between the source node and the target node.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-4, 6, 8-10, 12, 14-19, 21, 23-25, 27, 29-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Foster Patent No. 2002/0161,923 A1. Foster teaches the invention as claimed including method and system for reconfiguring a path in a communications network (see abstract).

7. As to claim 1, Foster teaches a method comprising:

establishing a cluster data port between the source node and a target node, the cluster data port configured to select among a plurality of connection paths between the source node and the target node, and to selectively switch over data flow from the target node to a backup target node (page 3, paragraph 24), wherein establishing the cluster data port includes establishing multiple concurrent logical connections between the source node and the target node, each logical connection configured to communicate data over a connection path among the plurality of connection paths (figure 1; page 4, paragraph 26; page 5, paragraph 33 & 36); and

communicating data from the source node to the target node using the cluster data port (page 2, paragraph 15).

8. As to claim 3, Foster teaches that the method as recited in claim 1, wherein establishing the cluster data port includes exchanging between the source and target nodes network addresses associated with at least one of the source and target nodes (page 6, paragraph 39).

9. As to claim 4, Foster teaches that the method as recited in claim 1, wherein establishing the cluster data port includes registering a client that is resident on the source node with the cluster data port (page 4, paragraph 30).

10. As to claim 6, Foster teaches that the method as recited in claim 1, wherein communicating data from the source node to the target node includes performing load balancing in the cluster data port to distribute the data among the plurality of connection paths (page 3, paragraph 24).

11. As to claim 8, Foster teaches that the method as recited in claim 1, wherein the cluster data port is configured to communicate data between the source and target nodes according to a messaging protocol selected from the group consisting of an asynchronous messaging protocol and a synchronous messaging protocol (page 2, paragraph 16).

12. As to claim 9, Foster teaches that the method as recited in claim 1, further comprising, with the cluster data port, switching data flow from the target node to a backup target node in response to an inability to communicate with the target node (page 5, paragraph 35).

13. As to claim 10, Foster teaches that the method as recited in claim 9, wherein switching data flow from the target node to the backup target node includes establishing a logical connection between the source node and the backup target node (page 3, paragraph 23).

14. As to claim 12, Foster teaches that the method as recited in claim 9, wherein switching data flow from the target node to a backup node is initiated by the cluster data port (page 4, paragraph 28; page 3, paragraph 24).

15. As to claim 14, Foster teaches that the method as recited in claim 1, further comprising communicating data from the target node to the source node using the cluster data port (page 3, paragraph 21).

16. As to claim 15, Foster teaches that the method as recited in claim 1, wherein the target node is remote from the source node, and wherein communicating data from the

source node to the target node includes communicating mirror data to support remote mirroring between the source and target nodes (page 4, paragraph 29).

17. As to claim 16, Foster teaches an apparatus, comprising:

a memory (figure 1);

at least one processor (figure 3); and

program code resident in the memory and configured for execution on the at least one processor to implement a cluster data port for a clustered computer system of the type including a plurality of nodes, the cluster data port configured to support communication between a source node and a target node among the plurality of nodes, the cluster data port further configured to select among a plurality of connection paths between the source node and the target node, and to selectively switch over data flow from the target node to a backup target node (page 3, paragraph 24), wherein establishing the cluster data port includes establishing multiple concurrent logical connections between the source node and the target node, each logical connection configured to communicate data over a connection path among the plurality of connection paths (figure 1; page 4, paragraph 26; page 5, paragraph 33 & 36).

18. As to claim 18, Foster teaches the apparatus as recited in claim 16, wherein the cluster data port is configured to exchange between the source and target nodes network addresses associated with at least one of the source and target nodes (page 6, paragraph 39).

19. As to claim 19, Foster teaches the apparatus as recited in claim 16, wherein the cluster data port is configured to register a client that is resident on the source node

(page 4, paragraph 30 switching data flow from the target node to a backup target node in response to an inability to communicate with the target node).

20. As to claim 21, Foster teaches the apparatus as recited in claim 16, wherein the cluster data port is configured to load balance data communicated between the source and target nodes to distribute the data among the plurality of connection paths (page 3, paragraph 24).

21. As to claim 23, Foster teaches the apparatus as recited in claim 16, wherein the cluster data port is configured to communicate data between the source and target nodes according to a messaging protocol selected from the group consisting of an asynchronous messaging protocol and a synchronous messaging protocol (page 2, paragraph 16).

22. As to claim 24, Foster teaches the apparatus as recited in claim 16, wherein the cluster data port is configured to switch data flow from the target node to a backup target node in response to an inability to communicate with the target node (page 5, paragraph 35).

23. As to claim 25, Foster teaches the apparatus as recited in claim 24, wherein the cluster data port is configured to switch data flow from the target node to the backup target node by establishing a logical connection between the source node and the backup target node (page 3, paragraph 23).

24. As to claim 27, Foster teaches the apparatus as recited in claim 24, wherein the cluster data port is configured to initiate the switch of data flow from the target node to a backup node (page 4, paragraph 28; page 3, paragraph 24).

25. As to claim 29, Foster teaches the apparatus as recited in claim 16, wherein the cluster data port is configured to support bidirectional communication between the source and target nodes (page 3, paragraph 21).

26. As to claim 30, Foster teaches the apparatus as recited in claim 16, wherein the target node is remote from the source node, and wherein the cluster data port is configured to communicate mirror data from the source node to the target node to support remote mirroring between the source and target nodes (page 4, paragraph 29;).

27. As to claim 31, Foster teaches a clustered computer system, comprising:

a plurality of nodes (page 2, paragraph 15); and

a cluster data port resident on at least one of the plurality of nodes and configured to support communication between a source node and a target node among the plurality of nodes, the cluster data port configured to select among a plurality of connection paths between the source node and the target node, and to selectively switch over data flow from the target node to a backup target node (page 3, paragraph 24), wherein establishing the cluster data port includes establishing multiple concurrent logical connections between the source node and the target node, each logical connection configured to communicate data over a connection path among the plurality of connection paths (figure 1; page 4, paragraph 26; page 5, paragraph 33 & 36).

28. As to claim 32, Foster teaches the clustered computer system as recited in claim 31, wherein the cluster data port is configured to select among the plurality of connection paths using a load balancing algorithm (page 3, paragraph 24).

29. As to claim 33, Foster teaches the clustered computer system as recited in claim 31, wherein the cluster data port is configured to switch over data flow from the target node to the backup target node in response to an inability of the source node to communicate with the target node (page 5, paragraph 35).

30. As to claim 34, Foster teaches the clustered computer system as recited in claim 31, wherein the target node is remote from the source node, and wherein the cluster data port is configured to communicate mirror data from the source node to the target node to support remote mirroring between the source and target nodes (page 4, paragraph 29).

31. As to claim 35, Foster teaches program product, comprising:

program code configured to implement a cluster data port for a clustered computer system of the type including a plurality of nodes, the cluster data port configured to support communication between a source node and a target node among the plurality of nodes, the cluster data port further configured to select among a plurality of connection paths between the source node and the target node, and to selectively switch over data flow from the target node to a backup target node (page 3, paragraph 24), wherein establishing the cluster data port includes establishing multiple concurrent logical connections between the source node and the target node, each logical connection configured to communicate data over a connection path among the plurality of connection paths (figure 1; page 4, paragraph 26; page 5, paragraph 33 & 36).

32. As to claim 36, Foster teaches the program product as recited in claim 35, wherein the signal bearing medium includes at least one of a recordable and a transmission medium (page 4, paragraph 26).

Claim Rejections - 35 USC § 103

33. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

34. Claims 5, 7, 11, 13, 20, 22, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foster, Patent No. 2002/0161923 in view of Modi, Patent No. 6,587,866 B1.

Foster teaches the invention substantially as claimed including method and system for reconfiguring a path in a communication network (see abstract).

35. As to claim 5, Foster teaches that the method as recited in claim 4. Foster fails to teaches the limitation wherein registering the client comprises identifying to the data cluster port at least one callback function associated with the client, wherein the cluster data port is configured to notify the client of a data port event by calling the callback function.

However, Modi teaches method for distributing packets to server nodes using network client affinity and packet distribution table (see abstract). Modi teaches the

limitation wherein registering the client comprises identifying to the data cluster port at least one callback function associated with the client, wherein the cluster data port is configured to notify the client of a data port event by calling the callback function (col 5, lines 17-26).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that when the status of a path changes, if a new path comes up or remove, the system would get back to the original setup. One would be motivated to do so to secure the interconnection with the redundant pathways.

36. As to claim 7, Foster teaches that the method as recited in claim 1. Foster fails to teach the limitation wherein each logical connection comprises a TCP connection.

However, Modi teaches the limitation wherein each logical connection comprises a TCP connection (col 5, lines 40-46).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that the system using the TCP connection would be faster. One would be motivated to do so to ensure that packets belonging to the same TCP connection are sent to the same server instance.

37. As to claim 11, Foster teaches that the method as recited in claim 9. Foster fails to teach the limitation comprising notifying a client of the cluster data port service of the inability to communicate with the target node, wherein switching data flow from the target node to a backup node is performed in response to initiation of a cluster data port failover by the client.

However, Modi teaches the limitation wherein notifying a client of the cluster data port service of the inability to communicate with the target node, wherein switching data flow from the target node to a backup node is performed in response to initiation of a cluster data port failover by the client (col 5, lines 28-39).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that a backup secondary node is able to take its place without the failure being visible to clients. One would be motivated to do so to allow a backup interface node to take over for an interface node that fails.

38. As to claim 13, Foster teaches that the method as recited in claim 1. Foster fails to teach the limitation comprising, with the cluster data port, resetting a logical connection between the source node and the target node in response to an inability to communicate with the target node.

However, Modi teaches the limitation wherein with the cluster data port, resetting a logical connection between the source node and the target node in response to an inability to communicate with the target node (col 8, lines 26-41).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that the system would be more reliable. One would be motivated to do so to ensure the connection of the source and destination nodes.

39. As to claim 20, Foster teaches the apparatus as recited in claim 19. Foster fails to teach the limitation wherein the cluster data port is configured to receive from the client at least one callback function associated with the client during registration of the

client, wherein the cluster data port is configured to notify the client of a data port event by calling the callback function.

However, Modi teaches the limitation wherein the cluster data port is configured to receive from the client at least one callback function associated with the client during registration of the client, wherein the cluster data port is configured to notify the client of a data port event by calling the callback function (col 5, lines 17-26).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that when the status of a path changes, if a new path comes up or remove, the system would get back to the original setup. One would be motivated to do so to secure the interconnection with the redundant pathways.

40. As to claim 22, Foster teaches the apparatus as recited in claim 16. Foster fails to teach the limitation wherein each logical connection comprises a TCP connection.

However, Modi teaches the limitation wherein each logical connection comprises a TCP connection (col 5, lines 40-46).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that the system using the TCP connection would be faster. One would be motivated to do so to ensure that packets belonging to the same TCP connection are sent to the same server instance.

41. As to claim 26, Foster teaches the apparatus as recited in claim 24. Foster fails to teach the limitation wherein the cluster data port is further configured to notify a client of the cluster data port of the inability to communicate with the target node, and wherein

the cluster data port is configured to switch data flow from the target node to a backup node in response to initiation of a cluster data port failover by the client.

However, Modi teaches the limitation wherein the cluster data port is further configured to notify a client of the cluster data port of the inability to communicate with the target node, and wherein the cluster data port is configured to switch data flow from the target node to a backup node in response to initiation of a cluster data port failover by the client (col 5, lines 28-39).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that a backup secondary node is able to take its place without the failure being visible to clients. One would be motivated to do so to allow a backup interface node to take over for an interface node that fails.

42. As to claim 28, Foster teaches the apparatus as recited in claim 16. Foster fails to teach the limitation wherein the cluster data port is configured to reset a logical connection between the source node and the target node in response to an inability to communicate with the target node.

However, Modi teaches the limitation wherein the cluster data port is configured to reset a logical connection between the source node and the target node in response to an inability to communicate with the target node (col 8, lines 26-41).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Foster in view of Modi so that the system would be more reliable. One would be motivated to do so to ensure the connection of the source and destination nodes.

(10) Response to Argument

- Appellant argues that the specification does disclose the claim limitation such as: establishing multiple concurrent logical connections between the source node and the target node on page 7, lines 5-8.

Specifically, applicant argues that "with respect to the fact these logical connections are "concurrent" in nature, while the term "concurrent" is not expressly used in the specification, the specification as a whole would be interpreted by one of ordinary skill in the art as teaching that multiple logical connections established between two nodes are concurrent logical connections. The examiner respectfully disagrees, even though the specification discloses establishing multiple connections that does not mean the connections happen at the same time or "concurrently". Multiple connections could be establish one after another. Applicant further alleges that "load balancing over multiple logical connections between two nodes involves the communication of data over the logical connections in parallel (i.e., concurrently)". The examiner disagrees with this allegation. The examiner has reviewed page 7, pointed by the applicant, but could not find any discussion about establishing logical connections in parallel (i.e., concurrently). Instead, the specification only discussed that enabling both connection redundancy and failover and multiple logical connections may be made between any pair of nodes as stated in page 7, lines 7-20. The specification disclosed "load balancing as switching to the backup target node whenever the primary target node failed and a cluster data port capable of

supporting redundancy both from standpoint of the connections paths available between the source node and a target node". This portion of the specification does not support the claim limitation "establishing the multiple concurrent logical connections..." In fact the specification does not mention anything about establishing multiple concurrent (or parallel) logical connections in the provided paragraph.

Therefore, the examiner maintains the §112, first paragraph and second paragraph rejections based on the lack of support for the concept of concurrent logical connections in the specification.

Furthermore, the applicant has contradicted himself by not putting weight on the amended claims such as "established between two nodes are concurrent logical connections", but instead the main argument on the Foster is "failed to disclose the establishment of multiple concurrent logical connections". See *In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975).*

- Appellant argues that Foster failed to disclose the establishing multiple concurrent logical connections between a pair of nodes.

Examiner respectfully disagrees. Applicant 's argument is invalid because the amended part of the claim "establishing multiple concurrent logical connections between a pair of nodes" is not supported by the specification. Furthermore, Foster discloses the claim limitation "wherein establishing the cluster data port includes establishing multiple concurrent logical connections between the source

node and the target node, each logical connection configured to communicate data over a connection path among the plurality of connection paths" (figure 1&2; page 4, paragraph 26; page 5, paragraph 33 & 36; Foster discloses that the method of IFM switch can be dynamically configured to interconnect its communications ports so that data can be transmitted through the interconnected ports or through multiple interconnection fabric module). Moreover, Foster discloses the method of checking to see if all the ports are selected or connected. Therefore, the connection could be connecting one after another or could be established at the same time. Foster clearly meets the claim limitation "establishing the cluster data port includes establishing multiple concurrent logical connections between the source node and the target node, each logical connection configured to communicate data over a connection path among the plurality of connection paths".

- Appellant argues that Foster does not disclose load balancing between multiple connections paths coupled between the same nodes.

Examiner respectfully disagrees. Foster discloses the claim limitation "wherein communicating data from the source node to the target node includes performing load balancing in the cluster data port to distribute the data among the plurality of connection paths" (page 3, paragraph 24; Foster discloses the method of performing load balancing by dynamically changing a path for the destination node). Moreover, Foster specifically addresses the load balancing

functionality such as dynamically changing a path so that data will be sent to a different destination node or sources. Therefore, Foster meets the claim limitation "communicating data from the source node to the target node includes performing load balancing in the cluster data port to distribute the data among the plurality of connection paths".

- Appellant argues that Foster does not disclose switching over to a different target node in response to an inability to communicate with a target node.

Examiner respectfully disagrees. Foster discloses the claim limitation "wherein with the cluster data port, switching data flow from the target node to a backup target node in response to an inability to communicate with the target node" (page 5, paragraph 35; Foster discloses that the method of creating a backup loops if there is no connection between each blocks as of the source and destination nodes). Moreover, Foster discloses the method of selecting the next port if a connection is already established for that port. Therefore, Foster meets the claim limitation "switching data flow from the target node to a backup target node in response to an inability to communicate with the target node".

- Appellant argues that there is no motivation to modify Foster with Modi.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teaching of the prior art to produce the

claimed invention where there is some teaching suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).* In this case in it would have been obvious to one of ordinary skill in the art at the time of the invention was made to implement Modi's callback function associated with the client into the step of establishing connections or paths in a communications network because it would have provided a mechanism for the path manager to the interested components when the status of the path changes. In other words, the proposed combination would notify the client whenever there is a change in the connection (see Modi, col 5, lines 13-25).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Thuong (Tina) Nguyen

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Thuong (Tina) Nguyen